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EDITORIAL DEPARTMENT NOTE

Inventive genius is never still. During periods of depression new ideas are at a premium; new ways of doing things better and more economically are being sought continually. Undoubtedly, during the past three years many plans have been laid for extensive experimental and developmental work just as soon as it seems wise to really begin it. Many projects previously begun have no doubt been temporarily suspended in order to conserve the cash necessary to carry them to final completion.

Millions of dollars are spent annually by large concerns for the purpose of carrying on this type of work, but in too many cases the methods of accounting for the cost of such work are far from being accurate or adequate. In this issue of our Bulletin we are presenting two papers on this subject which should be of considerable interest to many of our members.

Norman B. Clark, the author of the first paper, is a graduate of Harvard University and the Harvard Graduate School of Business Administration. He spent two years as a Government Auditor on Navy Cost-plus contracts, and one year in public accounting practice with Ernst and Ernst. He then entered the leather manufacturing business with the Meissner Leather Company of Boston, Mass. After two years with this firm, he headed his own firm, Clark and De Merritt of Boston. Four years later he sold out and went to Los Angeles to become the head of the Advanced Accounting Department of Woodbury College. He is a Certified Public Accountant in the State of California and Secretary of the Los Angeles Chapter of the National Association of Cost Accountants. Mr. Clark delivered his paper before a meeting of our Los Angeles Chapter.

Lester W. Field, the author of the second paper, was cost accountant for the Thode Island Tool Company from 1910 to 1917. Since 1917 he has been with the Lamson Company in their Boston and Syracuse offices, serving first as factory accountant, then as chief accountant, and finally as controller, which position he holds at the present time. Mr. Field has been an active member of our Association since 1919 and is a past president of our Syracuse Chapter. He has spoken before many of our chapters and has written numerous papers on accounting.

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NATIONAL ASSOCIATION OF
COST ACCOUNTANTS

FEBRUARY 1, 1934

ACCOUNTING FOR EXPERIMENTAL AND DEVELOPMENTAL COSTS

By Norman B. Clark, C.P.A.,
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NO TALK today would be complete without at least a fleeting reference to one of the two greatest experiments in social control the modern world has seen, so far, the National Industrial Recovery Act. I cannot help wondering when that act stipulates that goods must not be sold below cost, just how much experimental expense will be allowed to come within its definition of cost.

I doubt if there is any business today of any standing which is not almost constantly experimenting with some part of the business. It may be the product, or the method of production, or the method of distribution, or an attempt to discover a new product; but experimentation is always going forward.

Point of View

Tonight for the sake of brevity and to avoid needless repetition, I am going to speak from the point of view of a company whose developmental work has as its purpose the discovery of new products, or new designs, or new methods, rather than developmental work in discovering new sources of supply. I believe that the same principles will apply to the one as to the other. Both of them have two fundamental characteristics which will determine the policies which should be adopted in handling this expense. The first characteristic is the uncertainty of success. If there were any certainty of success, even if it were only a fairly predicable average of success, our handling of these costs would be a very simple problem to solve. In other words, it is not the successful development that presents the problem; it is the unsuccessful one. The second characteristic is the avoidability of the risk. In some businesses the risk need not be undertaken; in others it is unavoidable. A refinery may be able to operate without drilling; a tool company may depend upon experiments for its existence. And I shall use the terms "experimental" and "developmental" as though they were synonymous, although some seem to

draw a distinction between the two. I do not think the difference is important.

It is my belief that sound accounting principles are simply those which seek to apply sound statistical practices and sound business policies to the keeping of accounts; and therefore I shall try to analyze the problems involved and develop some guides in adopting an intelligent policy toward this subject. The mechanical part of the procedure is simple and requires very little attention. It is the selection of a policy which is important.

Material Available

I was rather surprised when this subject first piqued my interest to discover the paucity of material regarding it in text books. Many are silent upon it and most of the others dismiss it with a brief adjuration to be very conservative. Looking through the files of the publications of our own organization I found only one article on the cost of making an experiment, and a total of three pages in other places. Knowing the vast sums which are constantly being spent upon research, one would expect to find more. In order to get some of the material for this talk, I have examined the uniform accounting systems of some trade associations and corresponded with some representative industries where experimental work bulks large, and I must acknowledge the very great cooperation I have received from some of the accounting officers of these firms as to their current policies and practices.

Variety of Methods of Handling

There are, in current use, at least five distinct ways of handling experimental costs. Now if the situation is analyzed it will be seen that there are only five possible general ways of handling these costs, and therefore, everything has been tried.

1. The charges may be capitalized and liquidated over subsequent production. That is all right if the development is a success. What if it is a failure?
2. Experimental costs may be charged off directly, as an extraneous cost, or an appropriation of profits. This, no doubt, meets the most exacting conservatism, but it impairs the accuracy of the costs.

3. The costs may be considered part of the administration or commercial overhead, and not affect manufacturing costs. This is little different from the second method and merely as a matter of policy considers the expenditure an expense instead of an appropriation of profits.
4. Experimental expenses may be treated like manufacturing expenses to be absorbed like any other indirect manufacturing overhead. Under certain circumstances this may be satisfactory, but there are many conditions where it would be highly inaccurate.
5. Capitalize the cost of the experiments known to be successful, and write off the costs of the failures in one of the preceding three methods.

The fact that there are so many methods in use does not necessarily indicate a wide divergence of opinion, for conditions in different businesses may be so diverse as to justify all five, and then again, differences of practice may represent, like the handling of such disputed things as interest on investment and bad debt expense, a concession to expediency rather than a firm theoretical conviction.

Variety of Conditions

Because differences in conditions may have a decisive influence upon the method of accounting adopted, I should like to describe the different conditions that may be found.

In the first place the *volume* may range from part of the time of a superintendent or foreman or chemist on the one hand to an elaborate organization with a building of its own and scores of workers.

The experiments may vary as to *purpose*. They may be to improve methods, or a product, or to discover a new product, or new sources of supply, or they may be in the fundamental sciences. Sometimes even the purpose is vague.

Experimentation may be going on *constantly* or it may be sporadic, both in time and volume.

It may be of such a nature as to have a *high probability of success* as in the case of some engineering design or of so speculative a character that the expenditure is a mere gamble.

The experiment may relate to the company's own *standard products* or to special products for special customers.

The investigation may be one which is apt to *cost more than it is worth,* even if it is successful, or it may be undertaken under such conditions that it is fairly certain that the cost will be recoverable.

The company may find the risk of experiment *avoidable* or *unavoidable.*

Still other conditions may exist where the experimental costs take on the nature of *joint costs* and difficulty arises in assigning the cost to one or the other result.

With all these conditions and combinations of them possible it is little wonder that there should be opposing opinions as to how they should be treated.

Division of Subject

I am going to speak first on gathering the costs of an experiment, which should not be a difficult process, and then on the method of liquidating these costs. And in gathering the costs it should be remembered that there are two groups, namely, the costs before production begins and the costs afterwards. Or they might be described more accurately as the cost of completing the development and the cost of operating it.

Authorization of Experimental Work

It is the practice of some companies when an experiment which will use more than a small expenditure is to be undertaken to require that a requisition be made upon the management for permission to spend a certain sum of money, stating the nature of the experiment and what it is expected will be accomplished by the expenditure. When the expenditures are small and constantly recurring, such formal appropriations may not be necessary. If, after the appropriation has been nearly consumed it appears that more money will be necessary, a new apropriation must be requested, stating why an additional allowance is necessary, and at that time the authority responsible for this department may authorize continuation or end the investigation.

What Goes into the Cost of Experiment

Presumably, if developmental work is to be capitalized a number will be assigned to each project, and all costs will be charged to this order on a job cost basis. If the costs are to be charged as an expense, appropriate accounts will be set up. In stating what the costs are, I draw freely from the Uniform Accounting System of the Electrical Manufacturing Industry. These costs I speak of now are in the first group, those pertaining to completion of the project. They will include the compensation of engineers, chemists, and draftsmen, and the indirect expenses of the engineering laboratory, and drafting departments, the costs of blueprints, and experimental labor, material and factory expense incurred in manufacturing departments in making, testing and correcting products while in the process of development. Also, expenditures for initial and duplicate patterns and molds, jigs, punches, dies and other special tools. Special tools are defined as those which are not commonly useful but are designed for specific types of products and the use of which is dependent upon a continuation of the production of that product. Into the cost of the development also goes the cost of patents purchased from outsiders and the cost of patents obtained through the company itself, which should include not only the direct legal expenses of obtaining the patent, but a portion of the cost of a patent department if one is maintained, and the legal expenses in connection with the prosecution or defense of patent suits and payments in satisfaction for infringement of patent rights. Those who believe in distributing a portion of the general expenses to the factory may add some of the general expense to developmental work.

These charges will be collected through the ordinary channels such as material requisitions, labor tickets, vendors' invoices, time cards of engineers, chemists, and draftsmen, or a reasonable apportionment thereof. And if much experimental work is going forward, naturally a special subsidiary ledger for such charges should be opened.

The second group of charges will be those made in addition to the liquidation of the costs already collected, assuming the latter were capitalized. These operating charges will be for royalties paid under licenses from other patentees and work in remedying

defects discovered after production has begun. The cost of renewing or repairing special tools is usually charged as a part of indirect manufacturing expense.

It is, of course, possible to simplify this job-cost method of collecting the costs where the experimental work is a continuous year-in and year-out part of the operations by allocating the total costs on a fair estimate, such as dividing the total costs over the estimated value of successful developments. While the necessity for detailed records disappears, this method is subject to the limitations of all estimates. In the proposal just made, no attempt has been made to segregate the cost of unsuccessful developments, and on the whole it seems to me a rather hit-or-miss method.

Not All Laboratory Expense Experimental

It should be remembered that the average laboratory does a great deal of work which is not at all experimental. For instance, it may check instruments, inspect, test or analyze materials, both when received and during their progress through the plant, or it may make recommendations to the purchasing agent or analyze competitors' goods for the sales manager. Obviously the cost of these functions must be separated and charged to the appropriate department.

The Liquidation of Experimental Expense—Practice

Having gathered the costs, the next problem is to distribute them. As far as I have been able to ascertain, if there is any uniformity of practice upon this matter, it could be stated about as follows:

There are four distinct types of development, development work relating to methods of manufacturing, development relating to improvements on products now manufactured, development relating to new products, and fundamental research, in such fields as chemistry, or physics, not relating to any particular product directly.

Development work on manufacturing methods should be charged to manufacturing expense. Since in most factories, this is proceeding fairly constantly, it is contended that this is the proper treatment.

In the case of *work on products already manufactured,* the general opinion is that this too, should be charged to manufacturing expense and for the same reason.

Development work on new products is quite generally capitalized and amortized over production, or charged off outside of cost.

Fundamental research is generally charged as an administrative expense, or out of surplus, since usually it is not essential to operations.

Criticism of Practice and Suggested Methods

I am not ready to give unqualified agreement to all of this, even though I may admit, in many cases, it is the most feasible thing to do. In cost accounting, I believe we should first make an attempt to discover the theoretically correct practice, and then adapt actual practice as closely to it as it is reasonably feasible to do. I have tried to formulate some tests or guides in deciding the following questions, which seem to me to be the basic questions of the subject.

a. When should expenditures be capitalized?
b. What limit should be placed upon the amount capitalized?
c. What disposition should be made of unsuccessful experiments, or of amounts capitalized which have not been absorbed by production?
d. If "expensed," to what expense account should they be charged?

When Should It Be Capitalized?

The argument against capitalization, is that of the conservative: and the argument against excessive conservatism, is that it distorts the cost. The first is, of course, the better. In the last few years conservatism has gained back its prestige, and today it stands as its own justification. I should be the last to argue against it as a business policy.

Nevertheless, where developmental costs are large and erratic I see no other way of getting reliable costs than through capitalization. The capitalization may be offset by a surplus reserve, so that balance sheet conservatism is preserved. And even when the amount spent each year is fairly constant, unless the purpose and benefit of the experimental work are fairly evenly distributed over

the entire production, it would seem that it would have to be capitalized for the purpose of an equitable distribution over the items benefited, although part of this objective might be obtained by a process of departmentalization.

Nor should I be willing to subscribe without reservation to the contention that only experimental work on new products should be capitalized. An improvement in method or in an old product may be far more valuable than a new product. I have in mind the improvement on a machine which increased the production from 400 an hour to 20,000 an hour, and resulted in a valuable patent. If the development of method is as extensive as this, I doubt if anyone would object to its capitalization.

Those who advocate expensing these items entirely are working on the theory that it will average out about right. That is probably true in some businesses, but I do not need to explain how many errors are concealed by averaging, and expediency is the only justification for such a practice.

So I believe that developments, regardless of the purpose, should be capitalized when they represent large expenditures and it is conservatively believed that they will enhance earnings and asset valuations substantially over a period of time. These are relative terms and the honest judgment of the management must apply them.

What Limit Should Be Placed on Capitalization

As I have indicated earlier in this talk, it sometimes happens that the cost has little relation to the value and then we have one of those things which makes an appraiser's heart thrill to waltz time. Recognizing the necessity for conservatism, the costs to be capitalized should not exceed the fair appraised value of the development, and that is where one of the most difficult exercises of judgment comes in. In fact it is right here that those who argue for expensing the whole thing have their strongest point, since the woods are full of patents which went begging at $1,000 and later yielded huge profits, and vice versa. Assuming, however, as seems reasonable, that a fair judgment of value can be made, the costs in excess of this amount should be treated exactly like the cost of an unsuccessful experiment, for to the measure of the excess cost, the experiment was unsuccessful.

What Disposition Should Be Made of the Cost of Unsuccessful Developments?

Here we come to the neb of the subject. It may be said that the cost of unsuccessful experiments is a dead loss, no more chargeable to production than excessive idle time. Or it may be contended that successful developments should bear the cost of the unsuccessful developments. Which is correct? Generally speaking, the first view in my opinion is correct wherever the risk of experiment is avoidable. To illustrate, if an oil company could buy its crude oil but chose to drill instead, and had an abnormally high percentage of dry wells the loss is no part of the cost of production at the refinery. On the other hand, if the nature of the business is such that experimental work is unavoidable in the normal conduct of the business, a normal allowance for losses in this activity may be charged against the successful developments, just as a normal idle time allowance is permissible. This may be accomplished by setting up an expense reserve and charging unsuccessful developments and the unamortized balances of successful developments against it. To this reserve might also be charged the excessive cost of any development, although I have never heard of this being done in actual practice.

If Treated as an Expense, to What Account Should Experimental Costs Be Charged?

When experimental costs are not capitalized, to what expense account should they be charged? To answer this we must consider the nature of the experimental work and determine a policy for the business.

If they are going on *constantly* with about an *equal benefit* to all lines, and no great variation in the *probability of success,* and the work is compulsory, then charging it to manufacturing expense is quite justifiable.

If they are irregular, and of unequal benefit to all lines and highly problematical as to success, they should be charged as an administrative expense, or an extraneous loss.

If they are in the nature of bidding for business, they may be considered a selling expense.

Conclusion

In conclusion, I may say that it is well known that the capitalization of developmental expenses has been widely abused, and where an abuse exists we tend to try to lean too far in the other direction. The Department of Internal Revenue seems willing to accept any justifiable practice, even charging 100% of it as expense. I have mentioned how I think the proper allocation of experimental expense may be made without inflating the assets, and I have tried to analyze the subject and the treatment in such a way as to give some guides in adopting an intelligent policy toward this elusive subject.

And this is the end of this particular experiment.

STANDARDS FOR DEVELOPMENTAL AND EXPERIMENTAL EXPENDITURES

By Lester W. Field, Controller,
The Lamson Co., Syracuse, N. Y.

ALL progressive companies now operate on some form of budget system which is made up at the beginning of each fiscal year and adjusted to various current operating conditions on some basis applicable to the particular industry. The budget usually includes items for some expenditures which are very difficult to control as some are dependent on company policy, and others, due to their very nature, are of necessity indefinite. The following may be taken as examples of this special nature in the budget of one manufacturer:

1. Development and experimental work in connection with new product and improvement of present product	$120,000.00
2. Manufacturing preparation on item one.	75,000.00
a. New tools or changes in existing tools.	
b. New patterns or changes in existing patterns.	
c. Special machinery.	
3. Patent work	60,000.00
4. Relocations of machinery	10,000.00
5. Capital expenditures for buildings and standard machinery	50,000.00

The fact that millions of dollars are expended by American manufacturers annually for items such as those noted above is indisputable. During prosperous times, these expenditures were made rather freely on the approved recommendations of executives, but without a close analysis of the necessity or results to be obtained. Under the subnormal operating conditions starting in 1930, it has been necessary for the majority of manufacturers to do more careful planning for the conservation of cash and, at the same time, to retain their position of leadership in the particular field in which they operate in anticipation of the return of normal business.

For the purpose of this article, it is not necessary to give a description of the method adopted by one manufacturer to bring all of the items noted above under a much closer control with a surprising degree of success. Generally, the same method was applied to all expenditures of this grouping, but it will be necessary to explain only the set-up adopted for items one and two as being typical.

The two items taken as examples, i.e., development and experimental work and manufacturing preparation, are expenditures that are closely allied, but without a careful analysis prior to authorization for any particular product, may extend for a very indefinite time and the eventual expense may be entirely out of proportion to the final result obtained.

With subnormal business requiring close scrutiny of all expenditures, it was considered necessary to justify all recommendations and, as these two items make a very substantial part of general business expenses, a method was developed for establishing a predetermined standard for a complete program of development and experimental work for each item of product to be considered and the manufacturing preparation that would logically follow successful work of this nature, either as a new product or improvement of present product.

The controller consulted with all executives in any way responsible for this work, and a form entitled "Appropriation Request" was then adopted for the recommendation of expenditures to be made during the year. These may be made out at any time during the year, but the total of such appropriations must not exceed the budget established at the beginning of the year without special action by the executive committee. Each Appropriation Request is made in duplicate and includes only one proposition. As finally approved, this becomes the standard for the work to be performed and is made up complete before each proposition is started.

The form used consists of two sheets. Sheet A is used for the detailed description of work and results to be obtained, a summary of expenditure and net profit from Sheet B, and the approvals required before release. Sheet B is used for the details of standards established for each class of work, which covers not only item one, development and experimental work, but also includes item two, manufacturing preparation. This sheet also provides for various

SHEET A

APPROPRIATION REQUEST NO._____

TYPE OF STANDARD PRODUCT_____ CONTRACT OR PROPOSITION NO._____ OTHER (DESIGNATE)

PURPOSE AND DESCRIPTION OF WORK, AND RESULTS TO BE OBTAINED:

SUMMARY OF EXPENDITURE AND NET PROFIT

EXPERIMENTAL AND DEVELOPMENT EXPENSE	(A TO D)			PATENT EXPENSE	
SPECIAL	(E)			ADVERTISING EXPENSE	
MANUFACTURING PREPARATION	(F)			CAPITAL EXPENDITURE	
TOTAL					
ANNUAL GAIN	(G)				
NET GAIN				WILL STOCK ON HAND BE USED BEFORE NEW PRODUCT?	
NET PROFIT OR LOSS ON STOCK ON HAND	(H)			WILL STOCK ON HAND BE USED SIMULTANEOUSLY WITH NEW PRODUCT?	
FIRST YEAR PROFIT OR (LOSS)				IN EITHER CASE GIVE ESTIMATED YEARS TO WORK OFF OLD STOCK_____ YRS.	

APPROPRIATION	ROUTING AND APPROVALS (MAIL CODE NUMBERS)				AUTHORIZATION
DATE OF REQUEST					ORDER MAILED ORDER NO. FOR $
REQUESTED BY	APPROVED	APPROVED	APPROVED	APPROVED	AUTHORIZED BY DATE PRESIDENT

SHEET A

calculations of profit and loss resulting from the work recommended to be performed. As noted above, the summary of Sheet B is carried over and tabulated on Sheet A. A short study of the attached forms will bring out the very interesting fact that each appropriation, when completed, will either show a profit or a loss before work is started. The items on this are not necessarily all chargeable to expense but provide a total picture of the effect of all contemplated items necessary. If a profit is the final result, the appropriation practically justifies itself and it is only necessary for all the executives to look over the standard and assure themselves that the standard is proper for their particular division. If the result is a loss, then final approval may be a question of company policy, or sufficient reason to immediately turn down the whole request if it cannot be approached from the angle of a final profit to the company by some other method.

The Chief Engineer keeps a register of Appropriation Requests and assigns serial numbers to each. After registry, these are released and routed to executives for approvals.

1. General Sales Manager for approval of:
   a. Time of release of product, Sheet A.
   b. Disposition of stock on hand and time needed for same, Sheet A.
   c. Quantities and selling prices, Sheet B. paragraph G.
   d. Disposition and sales value, Sheet B, paragraph H.
   e. In general, all sales estimates and prices.
2. Vice President in Charge of Operations:
   a. All estimated costs, Sheets A and B, and recommendations of Engineering and Manufacturing Divisions.
3. Treasurer and Controller:
   a. Actual costs and actual quantities, Sheets A and B.
   b. General review, Sheets A and B.
   c. Financial approval of the appropriation.
4. President for executive approval and authorized release.

After the appropriation is released, an expense sales order is issued for the accumulation of actual costs and one copy is held at the point of origin (Chief Engineer), while the other copy is delivered to the Accounting Department with the expense sales order. Thereafter, the Controller is responsible for advising the

APPROPRIATION REQUEST NO. _____ S. O. _____ DATE ISSUED _____ SHEET B

ESTIMATED COST	DRAFTING		ENGINEERING		FACTORY					GRAND TOTAL	DATE RELEASED
					MATERIAL	LABOR		BURDEN	TOTAL		
	HOURS	AMOUNT	HOURS	AMOUNT	AMOUNT	HOURS	AMOUNT	AMOUNT	AMOUNT		
EXPERIMENTAL WORK											
1. PRELIMINARY INVESTIGATION											
2. ORIGINAL MODEL—DESIGN											
3. ORIGINAL MODEL—MAKE, ERECT AND TEST											
B. TESTING EXISTING STANDARD PRODUCT											
C. REDESIGN EXISTING STANDARD PRODUCT											
D. INVESTIGATE AND TEST NEW MATERIALS AND ARTICLES											
E. SPECIAL (EXPLAIN)											
F. MANUFACTURING PREPARATION											
1. DETAIL STANDARD WORKING DRAWINGS											
2. NEW PATTERNS											
3. CHANGES IN EXISTING PATTERNS											
4. TOOL DRAWINGS											
5. NEW PERMANENT TOOLS											
6. CHANGES IN EXISTING TOOLS											
7. SPECIAL MACHINERY											
TOTAL											

G. ESTIMATED ANNUAL SALES	CATALOG NUMBER	QUANTITY	UNIT COST	TOTAL COST	UNIT SELLING PRICE AT STD. M. V.	TOTAL SELLING	GROSS PROFIT	TOTAL	
1. NEW APPARATUS (COST—ESTIMATED)									
" " " "									
TOTAL NEW									
2. APPARATUS REPLACED (COST—ACTUAL)									
" " " "									
TOTAL REPLACED									
3. ANNUAL GAIN									

H. STOCK ON HAND	CATALOG NUMBER	QUANTITY	UNIT COST	TOTAL COST	USE ON JOBS	AMOUNT OF SALES IN YEAR TURNOVER	COST OF SALABLE PRODUCT	SALES VALUE	PROFIT OR (LOSS)
1. FINISHED STOCK—SYRACUSE									
" " "									
2. FINISHED STOCK—DISTRICTS									
" " "									
3. PARTS STOCK — SYRACUSE									
" " "									
" " "									
4. RAW STOCK — SYRACUSE									
" " "									
" " "									
TOTAL									

SHEET B

President each month of the progress of work (actual cost vs. standard) on all expense sales orders.

The adoption of the foregoing has resulted in savings for the past fiscal year of approximately $50,000 to one manufacturer for items one and two only, and as much again on other items. The successful operation of this method of standards requires the same careful establishment of proper estimated figures as would be made for the establishment of manufacturing standards for any regular product although it probably is not as susceptible to as close standards as for manufacturing operations.

Many concerns have successfully applied standards to their regular manufacturing operations and in recent years, a great many articles have been written on this subject. The similar application of standards by all industries to control their expenditures for development and experimental work, would favorably affect their earning and expense statements, and, eventually, the stockholders of those companies who carry the method through to a conclusion.

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OUR OPEN FORUM

Dear Mr. Pauly:

Thank you for your prompt reply to my letter of October 19 relative to the subject "Utilitization." [Published in the "Open Forum" of our November 1, 1933 Bulletin]

Although I will say frankly that I do not believe you have answered the questions I had in mind in my hypothetical cases, your letter does give me a clearer conception of the subject in the manner in which you have been thinking of it.

If I interpret your letter correctly, you agree that the Internal Revenue Department would not permit your method at present for income tax purposes, but that if the accounting profession were to agree that this was a better method than straight line depreciation, it may be sold to the Government as a standard basis or at least an elective basis. In other words, corporations can elect to file either individual company or consolidated returns, but having once decided must continue the basis; and if the Internal Revenue Department were convinced that "Utilitization" was also a fair method of depreciation and obsolescence, it could also be made elective, but once the method is decided by the corporation, it must be strictly adhered to, otherwise I am sure you can see that a corporation could use this as a juggling figure to avoid taxes.

This subject is similar to a great many accounting subjects in that I can see its good points and bad points which easily lead to discussion with both sides having considerable good points in their favor to substantiate their basis.

I am in agreement with you, however, that "Utilitization" properly based would be a lot better than some of the depreciation methods used. Possibly "Utilitization" combined with periodic appraisals (say every five years) would certainly be better than straight line depreciation.

As you perhaps know, the New York and Newark Chapters have at least one debate every year and possibly this subject can be worked up in debate form, thereby gaining more ideas on both sides and bringing the subject more into prominence. I shall take it up with our Board of Directors as a suggestion.

Again may I thank you for entering into this discussion.

D. RICHARDSON,
Monroe Calculating Machine Co.,
Orange, N. J.

Dear Mr. Pauly:

Your paper published in the Nov. 1, 1933 Bulletin deals with a timely subject. The inadequacy of "straight-line" depreciation has been brought home to many of us in recent years, and while we have attempted to overcome it, in some cases by claiming double the rate for periods of two shift operation and a fraction of the rate for periods of partial operation, the method outlined by you is preferable.

This principle is not without precedent in tax accounting, as in the case of mines, the Treasury has allowed depreciation on mining equipment on a tonnage basis computed with regard to the available supply of mineral.

For accounting purposes, I believe depreciation should be computed on cost of acquisition. Generally speaking, I am opposed to computing depreciation on "replacement values"; whether such value is greater or less than cost. For the purpose of arriving at selling prices of the product, it may be

advisable, or necessary, to include depreciation on increased or reduced value, as well as to include interest on investment, but this does not necessitate entry in the books of account.

Depreciation, while an essential element of cost of production, cannot be computed with exactness, and loss of useful value from year to year must, of necessity be estimated. Income Tax regulations recognize this by allowing a revision of the depreciation rate when it is apparent that the original estimate of life was incorrect.

For tax purposes there is, of course, a limit to the departure from the straight line method that may be permitted, but from an accounting and management viewpoint, I believe depreciation written off should follow the curve of utility and give consideration to the factor of maintenance expense, as the probable life of a machine depends to a large extent upon the policy of management with respect to repairs and renewals.

Take your hypothetical machine costing $2,750, with an estimated life of ten years; upon which depreciation would ordinarily be charged off at the rate of 10% per year. Assuming the plant operated 8 hours for 300 days and 75% operation as normal, this is equal to an estimated life of 18,000 hours: If depreciation were charged on an hourly basis the rate would be approximately 15c. per hour. If operating under "N. R. A." the rate may be subject to increase.

We will assume that this machine is a type which may be expected to run five years with normal repairs and probably without any considerable obsolescence. At the end of five years it may be expected to require a major overhauling, after which, as an obsolescent and "second rate" production unit, it will have a lesser utility value. I would suggest that an arbitrary amount (say 75%) of the cost ($2,062.50) be written off over the first 9,000 hours of operation, or at the rate of approximately 23c. per hour. Assuming an overhauling cost of $500, the amount of $1,187.50 ($687.50 and $500) would be written off over the remaining 9,000 hours, or approximately 13c. per hour.

In every plant there is machinery in operation that is fully depreciated on the books but examination will generally disclose that its use is limited, due to obsolescence, or inaccuracy, and, from the utility standpoint, is probably not worth any more than its maintenance cost. I cannot get excited about the fact that such machinery is wholly written off on the books, and do not believe in "revaluing" it, and "writing it up" on the books.

In cases where depreciation written off in prior years has been inadequate, or there has been a substantial decline in "replacement cost," this loss can only come out of profits, if, and when, earned, and I believe it should be written over the remaining life of the property on a "utility curve."

Very truly yours,

George W. Contant,
William J. Gunnell,
Buffalo, N. Y.

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